UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

August 5, 1998

Mr. Talley Jenkins
Department of Energy
Idaho Operations Office
850 Energy Drive
Idaho Falls, Idaho 83401-1563

Re: Response to Recommendations from the National Remedy Review Board (NRRB) on the Proposed Remedy for INTEC

Dear Talley:

Enclosed is a copy of the memorandum, dated March 18, 1998, submitted by the NRRB which provides recommendations on the proposed remedy for INTEC at INEEL. Also enclosed is a memorandum from EPA Region 10 which responds to these recommendations. As these documents relate to the evaluation and selection of preferred remedies for INTEC, please place a copy of both of these memoranda in the Administrative Record prior to the start of the public comment period on the Proposed Plan for INTEC.

Sincerely,

Keith A. Rose
INEEL WAG Manager

Enclosures

cc: Scott Reno, IDEQ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 18 1998

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: National Remedy Review Board Recommendations for the Idaho Chemical Processing Plant Superfund Site

FROM: Bruce K. Means, Chair
National Remedy Review Board

TO: Randy Smith, Director
Environmental Cleanup Office
EPA Region 10

Purpose

The National Remedy Review Board (NRRB) has completed its review of the proposed remedial action for Waste Area Group Three (Idaho Chemical Processing Plant) at the Idaho National Engineering and Environmental Laboratory (INEEL) Superfund Site near Idaho Falls, ID. This memorandum documents the NRRB's advisory recommendations.

Context for NRRB Review

As you recall, the Administrator announced the NRRB as one of the October 1995 Superfund Administrative Reforms to help control remedy costs and promote consistent and cost-effective decisions. The NRRB furthers these goals by providing a cross-regional, management-level, "real time" review of high cost proposed response actions. The Board will review all proposed cleanup actions where: (1) the estimated cost of the preferred alternative exceeds $30 million, or (2) the preferred alternative costs more than $10 million and is 50% more expensive than the least-costly, protective, ARAR-compliant alternative.

The NRRB review evaluates the proposed actions for consistency with the National Contingency Plan and relevant Superfund policy and guidance. It focuses on the nature and complexity of the site; health and environmental risks; the range of alternatives that address site risks; the quality and reasonableness of the cost estimates for alternatives; Regional, State/tribal, and other stakeholder opinions on the proposed actions, and any other relevant factors.

Generally, the NRRB makes "advisory recommendations" to the appropriate Regional decision maker before the Region issues the proposed plan. The Region will then include these recommendations in the Administrative Record for the site. While the Region is expected to give the Board's recommendations substantial weight, other important factors, such as subsequent public comment or technical analyses of remedial options, may influence the final Regional decision. It is important to remember that the NRRB does not change the Agency's current delegations or alter in any way the public's role in site decisions.

NRRB Advisory Recommendations

The NRRB reviewed the information package for the site and discussed related issues with EPA's Keith Rose, and Scott Reno of the Idaho Department of Health and Welfare on February 3, 1998. Based on this review and discussion, the Board offers the following comments.

General Comments.

- The Board found it difficult to see the relationship among several Waste Area subunits and their preferred alternatives. It recommends that the decision documents include an explanation of the relationship between various soil groupings, the perched ground water, and the Snake River Plain aquifer in the context of a clearly integrated site-wide cleanup strategy.

- The Board found the information on cost estimates difficult to understand. The Board recommends that DOE restructure this cost information so decision makers and others can more easily compare the costs of the competing alternatives (see the National Contingency Plan, 40 CFR 300.430(e)(9)(iii)(G)). This information should (1) be presented in the decision documents; (2) include present worth costs for specific alternative actions; and (3) exclude baseline operating costs for the facility which will be incurred regardless of cleanup approach or outcome.

- DOE 's proposed cleanup strategy relies on a future residential land use scenario (assumed to begin in 100 years) to determine its soil cleanup levels and excavation depths. In particular, the excavation depth may be a significant cost driver at this site. The Board believes that an industrial land use scenario may be more appropriate for this site given its current use and its location with respect to other developing residential areas. The Board recommends that DOE conduct an analysis comparing the effects that each scenario may have on remediation costs.

Ground Water Actions.

- The decision documents do not clearly explain how selection of the natural attenuation remedy for the Snake River Plain aquifer is consistent with OSWER guidance (OSWER Directive 9200.4-17 "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Sites," November 1997, see especially pp. 4, 6,11-15, 17-18). The Board recommends that the decision documents be revised to show how issues addressed in this guidance such as source control (pp. 16-17), preferred attenuation mechanisms (p. 6), plume boundary status (pp. 11-15), and complex hydro geologic setting were considered in selecting monitored natural

attenuation over other alternatives such as active remediation, physical or hydrological containment, or waiving of standards due to technical impracticability. The Board also suggests that the documents include a brief discussion of how monitoring data (including data on contaminant levels and plume movement) will be used to confirm the predicted attenuation of contaminants and to trigger active contingency remedies (see pp. 17, 19-20).

- DOE proposes a $5.2 million interim action to control precipitation run on and minimize infiltration in the tank farm area. While such actions may be warranted, it was not clear from the presentation that the resulting potential for reduced mobility of subsurface contaminants in this area was sufficiently evaluated. Such an analysis would be important to justify the costs of this interim action given that final groundwater actions will begin at the site within six years. The Board recommends that DOE assess the need for this early action by evaluating the potential reduction in contaminant mobility that would result, and its significance in the overall groundwater cleanup strategy for this Waste Area Group.

Soil actions.

- The NCP sets forth program expectations to treat principal threats wherever practicable (40 CFR 300.430(a)(1)(iii)). Another expectation is to contain low level threats, because treatment for these wastes may not be cost effective or practicable. The NCP also states that, for many sites, EPA will use a combination of treatment and containment. These expectations are discussed further in "A Guide to Principal Threat and Low Level Threat Wastes" (OSWER Directive 9380.3-06FS, November 1991). The Board recommends that DOE include in the decision documents for this site its rationale for managing the site's principal threat source materials through containment.

- The Board understands that DOE plans to construct a site-wide waste management facility. The Board supports this proposal, but recommends that DOE provide a detailed discussion about this proposed facility in the proposed plan including information such as the nature and volumes of soil to be placed in the facility.

- DOE proposes to take action on contaminated soils under buildings and structures scheduled for demolition and disposal (D&D). It is not clear at this time how extensive this future D&D work may be. Given this uncertainty, DOE should defer selecting between alternative 2 and alternative 3 for this action and conduct a post demolition and disposal assessment to determine which of the two alternatives should be selected. The Board recommends that DOE keep the planned on-site waste consolidation repository option available for these soils if needed.

The NRRB appreciates the Region's efforts to work closely with the State, DOE and the community to identify the current proposed remedy. The Board members also express their appreciation to the Region and State for their participation in the review process. We encourage Region 10 management and staff to work with their Regional NRRB representative and the Region 4/10 Accelerated Response Center at Headquarters to discuss any appropriate follow-up actions.

Please do not hesitate to give me a call if you have any questions at 703-603-8815.

cc: S. Luftig
T. Fields
B. Breen
J. Woolford
C. Hooks
E. Cotsworth
OERR Center Directors

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101
July 23, 1998

MEMORANDUM

SUBJECT: Response to Comments on the Proposed Remedy for the Idaho Chemical Processing Plan (ICPP) of the Idaho National Engineering and Environmental Laboratory (INEEL)

FROM: Randy Smith, Director, Environmental Cleanup Office, EPA Region 10

TO: Bruce Means, Chair, National Remedy Review Board (NRRB)

My staff and I appreciate the effort on the part of the NRRB in reviewing the proposed remedy for the ICPP at INEEL. The purpose of this memorandum is to explain how Region 10 intends to address the following comments submitted by the NRRB on the proposed remedy.

General Comments:

1) Decision documents should include an explanation of the relationship between soil groups, perched groundwater, and the Snake River aquifer.

Response: We agree that the definition of contaminated sites by media (soil, perched water, and groundwater) and the fact that the NRRB did not have a Proposed Plan to review, made it difficult to see the relationship between different sites and the impact of contaminants migrating between these sites. To address this concern, a section of the Proposed Plan has been devoted to explaining the relationships between the various sites at the ICPP. For example, contaminated soils in the vadose zone under the Tank Farm have the potential to significantly contribute to the contamination of the Snake River Plain Aquifer. We will also ensure that this discussion is carried into the Record of Decision.

2) Restructure cost estimates in the decision documents to: 1) include present worth costs for each alternative, and 2) exclude baseline operating costs for operating facilities.

Response: The information provided the NRRB was pre-Proposed Plan. As we stated at the review, the cost estimate provided in the Proposed Plan and ROD will be in terms of present worth in keeping with the NCP. DOE also wants to show costs in current year (1997) non-discounted dollars, to reflect future budget needs. The only baseline operating costs included in the alternative cost estimates is for environmental monitoring and institutional controls (security, maintenance of fences, worker medical monitoring, etc.) which DOE would be required to conduct during the period it continues to operate the ICPP in order to protect workers and the

public from unacceptable risks. For this reason, the "no action" alternative for each operable unit only includes ongoing monitoring and institutional control costs. We recognize that some of the institutional controls specified for individual sites contain controls which would also benefit other sites, and therefore these institutional control costs appear redundant. This was done in the Feasibility Study to ensure that the evaluation of alternatives for each group of sites be independent of the evaluation of alternatives for the other sites. To inform the public of this situation, the Proposed Plan will include a discussion of potential cost saving for the integrated cleanup project if the preferred alternatives are selected. The ROD will provide an integrated project cost estimate and will specifically identify these cost savings.

3) A future industrial land use scenario may be a more appropriate for this site instead of a residential land use scenario.

Response: An evaluation of what is an appropriate cleanup depth at INEEL is complicated by concern for adequate protective measures for current workers as well as for potential future users of the site beyond the period of government control. The remedial action objective for a 100-year future use residential scenario at INEEL is to achieve a 10E-4 residential risk. This 10E-4 residential risk would approximately equal a 10E-5 future industrial risk with the exception of the excavation depth. A 10-foot excavation depth is considered reasonable for a residential scenario since residential dwellings are assumed to have basements. A 5-foot excavation depth is considered reasonable for an industrial scenario since buildings are assumed to be built on slabs whose footings go below the frost penetration zone, which is 5 feet below the surface at INEEL. DOE estimates it would cost about $50 Million to excavate contaminated soil at the ICPP to a depth of 10 feet, and estimates it would cost about $44 Million to excavate to a depth of 5 feet. This would result in a potential cost savings of $6 Million (12% savings).

Unfortunately, given the time constraints imposed by the NRRB, our presentation on the ICPP did not focus on the risk to current workers. The risk to current workers due to radioactive soil (excluding the Tank Farm soil) exceeds a 10E-3 risk using EPA default parameters. Under the current nuclear industry scenario, new industrial construction would require excavation depths of at least 10 feet. In our discussions with DOE and the State of Idaho, both agencies believe that the 10 feet excavation depth is appropriate given the potential risk to current workers and the extent of radioactivity present.

Ground Water Actions:

1) Explain how selection of the natural attenuation remedy for the Snake River Plain aquifer is consistent with OSWER guidance.

Response: Rather than a monitored natural attenuation approach, the preferred alternative now identifies an "action level" concentration for I-129. Concentrations of I-129 currently exceeding this action level (6.0 pCi/L) are predicted to result in I-129 concentrations exceeding the MCL at the end of the institutional control period. If concentrations of I-129 are found in sufficient

quantities above this action level during remedial design monitoring, a pump and treat system would be installed to both contain and remove the portion of the I-129 mass which would cause an exceedance of the MCL in the future. Prior to implementing such a remedial action, a treatability study would be conducted to determine the feasibility of achieving the cleanup goal for I-129 through treatment. Based on current field data, which indicates that model predictions are conservative, we do not believe that I-129 concentrations will be found to exceed the selected action level.

2) DOE should assess the need for the interim surface water control action for the tank farm soils by evaluating the potential reduction in contaminant mobility that would result from this action.

Response: An analysis was conducted to determine the relative impacts on the migration of contaminants from the Tank Farm soils by implementing surface water controls through an interim remedial action. The Tank Farm area is approximately 145,000 ft^2. Currently the precipitation from an area of approximately 256,000 ft^2 (1.8 times the area of the Tank Farm) is allowed to drain into the Tank Farm area. As a result, the natural precipitation of 8.9 in/yr produces an average of 15.9 in/yr of potential infiltration in the Tank Farm area. Implementation of the proposed interim action would reduce this infiltration in the Tank Farm area by approximately 80%. The impact of this reduction in the infiltration rate for three of the major contaminates (Cs-137, Sr-90 and Pu) was analyzed using a simple model to simulate the movement of these contaminants through the Tank Farm soils. The results of this modeling indicate that the proposed reduction in infiltration would decrease the rate of contaminant migration by a factor of 5, significantly decreasing the mass of contaminants eventually reaching the perched water and the aquifer. If these surface water controls are kept in place until the final Tank Farm soil remedy is implemented, the concentrations of Sr-90, Cs-137, and Pu eventually reaching the perched water would decrease by factors of 8.7, 1.5×10^8, and 4.7, respectively. Therefore, by controlling the source of contamination through reducing water infiltration, the benefit would be to significantly reduce the migration of radioactivity into the aquifer and eliminate the need for costly future groundwater remedial action. Based on this rationale, we support surface water control as a component of the preferred interim action for the Tank Farm soils.

Soil Actions:

1) The Board recommends that DOE include in the decision documents for this site its rationale for managing the site's principal threat source materials through containment.

Response: The majority of ICPP soil regarded as principle threat soil is the Tank Farm soil, because it poses a high risk due direct exposure and groundwater contamination. The Tank Farm soil has been designated as a separate operable unit for a separate RI/FS and ROD. Remediation of the Tank Farm soil will likely include a treatment component to reduce mobility and/or toxicity of contaminants. Soil outside of the tank farm contains some principle treat soil because of a high risk associated with direct exposure. Soil sorting and soil washing, two soil treatment

technologies to reduce soil volume, were evaluated for this soil in the Feasibility Study. Soil sorting was retained as a feasible technology for Alternative 4B, which includes off-site disposal of this contaminated soil, but was not retained as a component of Alternative 4A (on-site disposal) because soil sorting was not found to be cost effective for on-site disposal.

After conducting an evaluation, alternative 4A, which calls for containment of contaminated soil in a repository to be constructed at ICPP, was selected as the preferred alternative. This repository would have an engineered cover and liner, which if properly maintained, would provide adequate human health and environmental protection through containment until the radionuclides in the contained soil naturally decay to acceptable levels. This on-site repository was selected as the preferred alternative because it provides adequate protection and was found to be more cost effective than other alternatives being considered.

2) DOE should provide a detailed discussion about the proposed site-wide waste management facility, including the nature and volumes of soil to be place in this facility.

Response: A summary discussion of the costs and benefits of an INEEL-wide soil repository will be provided in the Proposed Plan. A detailed discussion of the costs and benefits of this repository, the types and volumes of soils to be place in the repository, and the waste acceptance criteria for this repository would be provided in the ROD.

3) DOE should defer selecting between alternative 2 and 3 for the Soils Under Buildings site until a post-demolition disposal assessment has been conducted. DOE should keep the proposed on-site waste repository available to receive these soils if needed.

Response: We acknowledge the uncertainty in selecting a final remedy for the soils Under Buildings site where the the future D&D action has not yet been selected. However, we believe that a preferred alternative which includes interim institutional controls until the D&D action occurs, and a final remedy based on the most probable D&D action, can be selected at this time. In regard to the future D&D action for this site, the cost of complete removal of all four buildings which cover areas of contamination at this site is significantly more expensive than the cost of demolishing these building in place. Given the current budget constraints for DOE, and the likelihood that the budget for future D&D actions will also be constrained, the most likely future D&D action will be demolition of these structures in place. Since contaminated soil would not be accessible under this scenario, the most cost-effective remedial action would be to place a containment cover over the contaminated soil and building debris. Alternative 2, the preferred alternative, consists of institutional controls until D&D action occurs and then containment of the contaminated soil with an engineered barrier. This barrier would be designed to prevent future exposure, allowing for natural radioactive decay to reduce radionuclide concentration to levels that are not a risk to human health. The barrier would also be designed to minimize moisture infiltration and leaching of contaminants from the underlying soils. In the unlikely event that the D&D Program removes the buildings and their foundations, contaminated soils would be removed and disposed as described in Alternative 3, which is the contingent alternative.

Again, we appreciated the effort by the NRRB in reviewing the proposed remedy for the ICPP. This review identified components of the remedy which needed to be revised or refined prior to the Proposed Plan to ensure that the remedy was appropriate and cost-effective.